

2.10 Complete the Square

Complete the square b) find the vertex c) determine orientation of opening

1. $y = x^2 - 2x + 3$

2. $y = x^2 + 2x + 7$

3. $y = x^2 + 4x + 3$

4. $y = 5 + x^2 - 6x$

5. $y = 3x^2 - 6x - 1$

6. $y = 2x^2 - 4x - 1$

7. $y = -x^2 - 8x + 2$

8. $y = 10x + 5 - x^2$

9. $y = 4x^2 - 8x + 3$

10. $y = 4x^2 + 24x + 1$

$$11. y = -3x^2 - 12x + 1$$

$$12. y = 1.5x^2 + 6x - 8$$

$$13. y = x^2 - \frac{2}{3}x + 1$$

$$14. y = -\frac{1}{3}x^2 + 2x + 4$$

$$15. y = 3x^2 - \frac{1}{4}x$$

$$16. y = \frac{1}{2}x^2 + \frac{3}{4}x + 1$$

solutions: 1. $y = (x-1)^2 + 2$ b) (1,2) c) up 2. $y = (x+1)^2 + 6$ b) (-1,6) c) up 3. $y = (x+2)^2 - 1$ b) (-2,-1) c) up 4. $y = (x-3)^2 - 4$ b) (3,-4) c) up
 5. $y = 3(x-1)^2 - 4$ b) (1,-4) c) up 6. $y = 2(x-1)^2 - 3$ b) (1,-3) c) up 7. $y = -(x+4)^2 + 18$ b) (-4,18) c) down 8. $y = -(x-5)^2 + 30$ b) (5,30) c) down
 9. $y = 4(x-1)^2 - 1$ b) (1,1) c) up 10. $y = 4(x+3)^2 - 35$ b) (-3,-35) c) up 11. $y = -3(x+2)^2 + 13$ b) (-2,13) c) down 12. $y = 1.5(x+2)^2 - 14$ b) (-2,-14) up
 13. $y = (x - \frac{1}{3})^2 + \frac{8}{9}b(\frac{1}{3}, \frac{8}{9})c)up$ 14. $y = \frac{-1}{3}(x-3)^2 + 7b(3,7)c)down$ 15. $y = 3(x - \frac{1}{24})^2 - \frac{1}{192}b(\frac{1}{24}, \frac{-1}{192})c)up$
 16. $y = \frac{1}{2}(x + \frac{3}{4})^2 + \frac{23}{32}b(\frac{-3}{4}, \frac{23}{32})c)up$